

Dr. J. Willett  
Code SSF  
NASA HQ  
Washington D.C.



FINAL  
70-40-11  
2017  
12-160

Date: May 6, 1997.

Subj.: NASA grant NAGW-4904:

**Alaskan Auroral All-Sky Images on the World Wide Web.**

Final Report.

Enclosed is a copy of the Final Report for NASA grant NAGW-4904. The grant has provided critical funding for completing the effort of bringing the Poker All-sky images on to the WWW. The all-sky Web page has been very popular and we are continually improving the presentation following user comments. During the 96/97 we participated in the FAST mission with 5 all-sky cameras deployed across Alaska and Western Canada. We had hoped to be able to access these data in real time through the Web site, but that proved to be technically and financially impossible. However, we still want to add more stations. As stated in the final report, we are currently upgrading the Poker Flat Rocket Range all-sky cameras at Fort Yukon and Kaktovik. We hope to be able to add these stations to the Web site within the next year or two.

Sincerely,

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Established by Act of Congress, dedicated to the maintenance of geophysical research concerning the Arctic regions.

Subj.: NASA grant NAGW-4904:  
**Alaskan Auroral All-Sky Images on the World Wide Web.**  
Final Report.

Date: May 1, 1997.

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In response to a 1995 NASA SPDS announcement of support for preservation and distribution of important data sets online, the Geophysical Institute, University of Alaska Fairbanks, Alaska, proposed to provide World Wide Web access to the Poker Flat Auroral All-sky Camera images in real time. The proposal was accepted granting \$9,728 for one year ending December 1996.

For short periods during the winter of 1994/95 1 minute resolution Poker All-Sky TV images were made available in real time on the WWW. This proved to be a popular site and work started to automate the process through a general upgrade of the hardware and software involved. Financial support for the automatization has come from a number of sources. For example, the support for the computerized camera controller came from the National Science Foundation, while this grant has, in part, supported the development of the Web access software.

The Poker auroral all-sky camera is located in the Davis Science Operation Center at Poker Flat Rocket Range about 30 miles north-east of Fairbanks, Alaska, and is connected, through a microwave link, with the Geophysical Institute where we maintain the data base linked to the Web. To protect the low light-level all-sky TV camera from damage due to excessive light, we only operate during the winter season when the Moon is down. The camera and data acquisition is now fully computer controlled. Digital images are transmitted each minute to the Web linked data base where the data are available in a number of different presentations:

- 1: Individual JPEG compressed images (1 minute resolution)
- 2: Time lapse MPEG movie of the stored images
- 3: A meridional plot of the entire nights activity

The real time images, as well as the archived data, are available at:  
<http://gedds.pfrr.alaska.edu/allsky/allsky.htm>

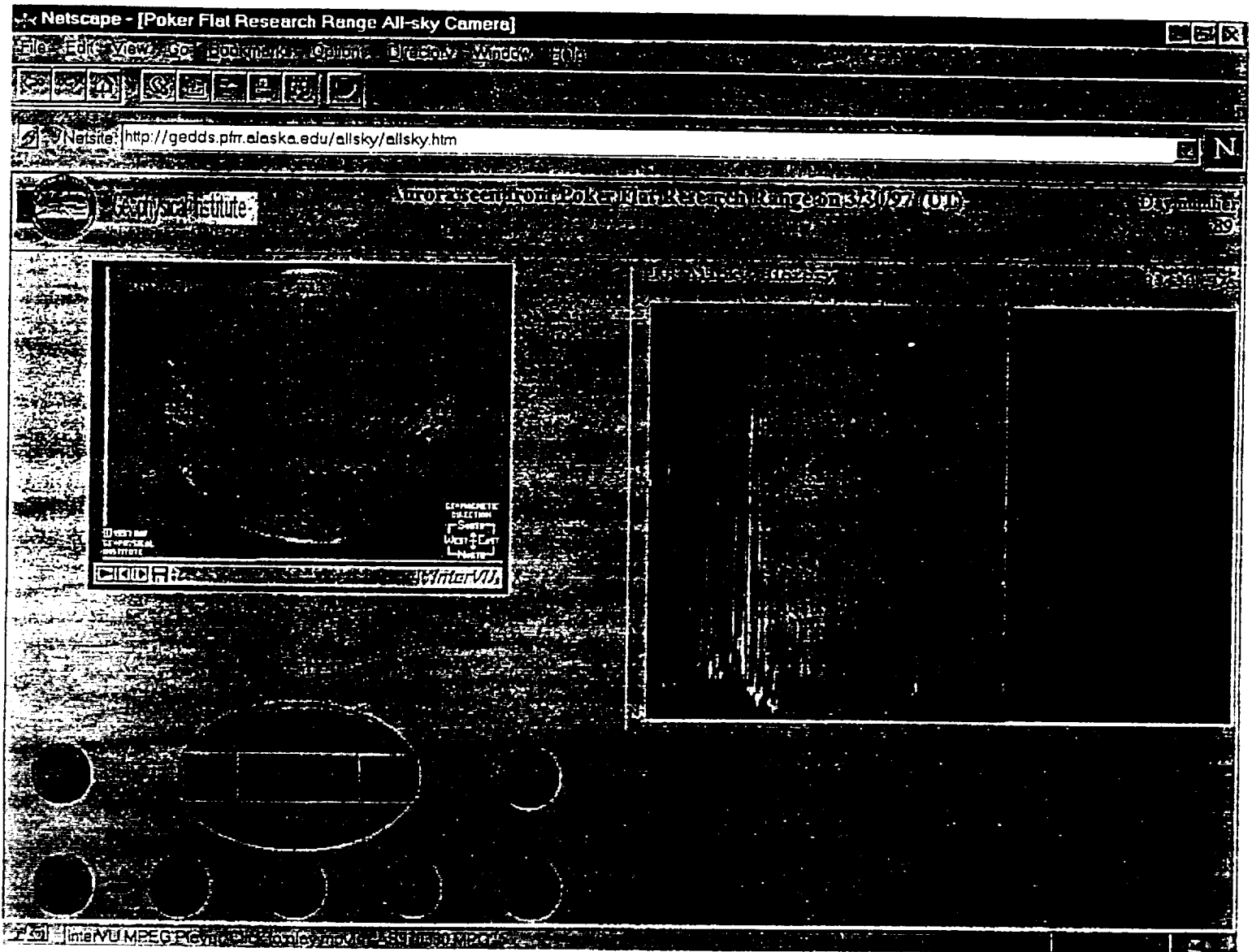
The data can be reached through the GEDDS home page (<http://gedds.pfrr.alaska.edu>) or the home pages of Poker Flat (<http://dac3.pfrr.alaska.edu>) and the Geophysical Institute ([www.gi.alaska.edu](http://www.gi.alaska.edu)).

The figure shows the all-sky Web page. The data part of the page has the current all-sky image in the upper left. The all-sky camera is oriented so that magnetic north is at the bottom and east to the right. UT time, date and station is shown at the top of the image. The image is as one would see the aurora facing north and looking up. To the right on the Web page is the meridional plot indicating the night's activity. This plot is showing a time series of the auroral intensity along a column across the center of the all-sky image (i.e. along the magnetic meridian). Time is from left to right and north is at the bottom of the plot to conform with the all-sky image shown. The plot shows about 5 hours of data. At the start of the night the aurora was near the northern horizon; a little more than an hour later the auroral activity picked up and the aurora expanded both north and south. Aurora was present overhead of Poker for the remaining of period presented. The meridional plot has turned out to be a very efficient way to provide information at a glance about the general activity as well as sky conditions. Buttons at the lower left of the page control the data displayed providing access to the archived data, to the data in real time including real time updates of the images, to view the data as a time lapse MPEG movie (not available for current night's data), etc.

The all-sky page is also linked through the GEDDS home page to other Poker data sets, such as meridian scanning photometer, magnetometer and riometer data.

At the Poker Davis Observatory the Poker all-sky images are combined with other all-sky images received at Poker and displayed on a map assuming an altitude for the auroral emissions. This display has been used extensively by rocket experimenters. We had expected to be able to provide access also to these data over the Web, but this turned up some unanticipated technical problems. Essentially, the automatization of sending the data to the data base combined with bandwidth limitations on the microwave link to Poker require more processing time and equipment than we have available. Consequently, Web access to this data set has had to be postponed.

The Web access software has been written with multi-station operation in mind. All-sky cameras are operated by Poker Flat Rocket Range at Fort Yukon and Kaktovik, 200 km and 500 km north of Poker, and it would be highly desirable to have also these data available in real time on the Web. We are in the process of upgrading the cameras and the data lines to the sites for automatic operation similar to that of the Poker all-sky camera. We do not have a firm schedule, but we hope that funds for completing the upgrade will become available over the next few years. When this is done the Web access software will be extended to cover the all-sky images from these stations.



The Geospace Environment Data Display System allsky camera image world-wide web page ([HTTP://gedds.pfrr.alaska.edu/allsky/allsky.htm](http://gedds.pfrr.alaska.edu/allsky/allsky.htm))